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MAY 13, 1950

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Size and Temperament

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MEDICINE

Cortisone for Sarcoidosis

The arthritis wonder drug may prove useful in treating a mystery disease often confused with TB, syphilis and other diseases. No treatment for it is now known.

► CORTISONE, wonder drug for arthritis, is now on trial as a possible remedy for a mystery disease known medically as sarcoidosis.

This disease is a chronic ailment affecting lymph glands, lungs, bones, intestines, spleen, liver and skin in various combinations. That is, some patients will show lung and skin symptoms, others gland and lung symptoms, and so on. The disease has been confused with tuberculosis, Hodgkin's disease and syphilis.

The trials of cortisone in sarcoidosis are being made by a medical team from Emory University School of Medicine and Grady Hospital, Atlanta, Ga. So far they have not gone on long enough to show what results, if any, the drug will have.

No other effective treatment for the disease is known. No cause for the disease has yet been discovered, but the Atlanta physicians are getting a lead to this through

studies reported at the meeting of the National Tuberculosis Association.

The disease is definitely not a tuberculous infection, they believe as a result of their studies. A follow-up study of 350 sarcoidosis patients in military hospitals during World War II shows that the patients are predominantly from small towns in the southern United States. This seems to rule out its being a tuberculous infection, since tuberculosis is more prevalent in large cities.

The Atlanta doctors, Max Michael, Jr., and Paul Beeson, are going to interview everyone of the 350 patients whom they can locate through Veterans Administration records. They plan to question these sarcoidosis patients about every detail of their history, where they have lived, what diseases they have had, and so on. From this information they hope to discover a common factor which will reveal the cause of this still mysterious and not too rare disease.

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NUCLEAR PHYSICS

From Now On: Ray Study

The study of cosmic rays will give us greater knowledge of outer space in the future and also more information on the inner atom.

Seventh in a series of glances forward in science.

By WATSON DAVIS

► AN intensely "practical" person, who is also unimaginative, may consider quite useless the study of elusive particles that come to earth from outer space.

Actually the cosmic rays, studied intensely for two decades, are one of the few ways in which we can sample both the outer universe and the inner atom.

They are the most energetic bombarding particles that man has ever observed. There are created in the far reaches of the cosmos fragments of atoms and bits of matter and energy that, despite our great atomic accelerators and bombs, we have no hope of exceeding or even equaling here on earth.

Constantly cosmic radiations plunge into the earth's atmosphere, smashing their way through the atoms there. There are tremendous showers and cascades of particles, with the highest energies yet measured, and these are not only constant but uncontrollable. They are no less real because we can

not feel them or see them or because they seem to do our bodies no harm.

Balloons are sent with cosmic ray recording instruments to the greatest heights attainable. Airplanes are flown on high-altitude research missions and laboratories are set up on mountain tops.

In a world that is concerned about atomic superbombs, made of hydrogen or some other light chemical element, every scrap of information about the fundamental particles of nature and the way they fit together may be productive. The present atomic bomb was born of experiment and theory.

Bombs of the future—even beyond the so-called hydrogen bomb—and peaceful applications of atomic energy are likely to come out of the fundamental information being gathered from cosmic rays. Soviet scientists, incidentally, have been in the forefront of cosmic ray research.

What holds the nucleus (heart) of the atom together is a central problem. Part of the answer came through discovery in cosmic rays of the meson, a binding par-

ticle of fleeting life when free. Only two years ago mesons were created in the 184-inch Berkeley cyclotron, and this gives a controlled method of producing one sort of meson—for there are at least two kinds, a heavy one called "pi" produced by bombardment and one lighter "mu" sort that is born of the decay of the heavy one.

Mesons can be thought of as fundamental particles entering into hearts of matter, so important in the fast-moving theories and experiments of our atomic race.

For investigations of mesons, the cosmic rays are the simplest tool. Scientists can study them with relative simplicity by exposing special photographic plates, under various conditions, at various places on, beneath and above the earth. When you hear of some physicist going to some high mountain or to some strange and remote place, his interest is in the geography of the atom instead of the earth's geography. He will be receiving messages from other galaxies, perhaps, that will explain the atom.

For the future, there can be expected:

A. Discovery of the birthplace of the cosmic rays, which various theories have coming from the stars, other galaxies and space itself.

B. Better understanding of the atom-smashing of the cosmic radiation will show more precisely how the nuclei of the atoms are put together, what particles are contained in them and how they may be tapped for energy.

C. Although most cosmic radiation is light stuff, atoms as heavy as iron have been demonstrated in cosmic radiation. These and other samples of matter in the outside space should help us unravel further the puzzle of the universe.

D. Reversing the accent on getting energy from atoms, cosmic ray study may warn us as to what atomic reactions should be avoided for fear they will go too far and create an uncontrollable chain reaction on earth.

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PSYCHIATRY

Better Recovery Odds for Self-Destructive Patient

► THE mental patient who slashes his own wrists or bangs his head against the wall has a better chance of later recovery than does the patient who makes an attack on his nurse or fellow-patient.

This was revealed by study of 400 accident and injury reports in a mental hospital. Results were reported to the Eastern Psychological Association meeting in Worcester, Mass., by Dr. George W. Albee, of the Western Psychiatric Institute and Clinic, Pittsburgh.

Those suffering from the very common mental disease schizophrenia are more likely to take out their aggression on others than to attack themselves. But the outlook was found to be better for those who punish themselves. This was true for the schizophrenics as well as the other cases.

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MEDICINE

Stomach Cancer Detection

Cytological diagnosis is now being applied to the detection of cancer of the stomach. The method has proved accurate in 60% of the cases examined so far.

► THE possibility that deaths from stomach cancer may be reduced considerably with further development of a diagnostic test now in the experimental stage was visualized in a report made to the meeting of the California Medical Association in San Diego.

The test is an application of the cytological diagnosis technique, which has been used recently with increasing success in detecting cancer of the lung and of the cervix. This report was made by University of California Medical School physicians who have pioneered much of the application of this technique.

The significance of the test lies in the promise that it can be used successfully in detecting stomach cancer in the early stages. Stomach cancer is one of the most difficult forms of the disease to detect. It is easily confused with ulcers and other stomach disorders. Even in the late stages, it is sometimes impossible to detect it by X-rays, the most reliable test now in general use.

By the time it can be demonstrated that cancer is present, it is often too late to treat the ailment successfully. Because stomach cancers usually are so far advanced, before surgery is attempted, doctors are able to cure only about 25% of patients at the present time.

Although the cytological test for stomach cancer is not yet ready for general use, the University of California physicians foresee the possibility that it may be used in the future as one of the many aids of the physician in attempting to determine the stomach disorders in his patients. One of its advantages is its simplicity.

In cytological diagnosis, fluid samples are taken from suspected areas, stained, and examined under a microscope. Where cancer exists, cancer cells may be expected to be present in the fluids. Sputum, for instance, contains cancer cells when cancer is present in the lungs. Trained technicians can tell the difference between normal and cancer cells.

Cytological diagnosis for cervical and lung cancer is now accurate in 90% of cases examined at the University of California Medical School, and this is a superior record.

It was tried first several years ago. Fluid samples were taken from the stomach and examined in the usual way. Scientists over the country have been successful in about 60% of cases, which compares favorably with any other stomach cancer test.

Last year, the San Francisco scientists began work on a method of improving the

test. One difficulty had been caused by a heavy coating of mucus overlying the stomach wall, a coating which is particularly heavy over cancer areas. This prevented the obtaining of samples directly from surface of the stomach wall.

A solution containing papain, a digestive enzyme obtained from the tropical fruit, papaya, was tried in an effort to dissolve this mucus. The effort was successful, and it permits doctors now to obtain more suitable fluid samples directly from the stom-

ach wall.

Since this development, it has been possible to try the new technique on only four patients later proven to have cancer of the stomach. In all four cases, however, cancer was diagnosed by the test.

This is too few cases to determine just how efficient the new technique will be. However, the scientists said that on the basis of success in the case of lung and cervical cancer, similar results may be expected.

Training of technicians to apply the new technique is sponsored by the American Cancer Society. Upon the experience and training of the technicians depends the reliability of this test. The research was sponsored largely by the U. S. Public Health Service.

The physicians reporting the new development were Drs. Herbert F. Traut, Milton Rosenthal, Richard Skahen, Morris E. Dailey and Chu Hui Chang.

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NUCLEAR PHYSICS

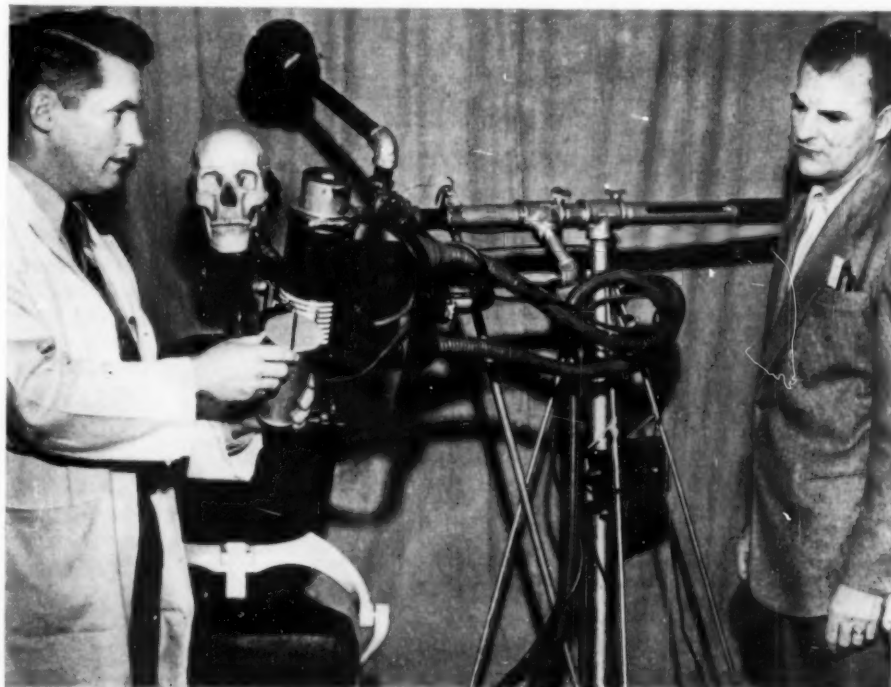
Dineutron Found

► THE double-weight neutron, for some time considered a possibility among atomic particles, actually exists.

In experiments at the Los Alamos Scientific Laboratory, where atomic bomb work is being done, definite evidence has been

obtained for the dineutron, a particle of neutral electrical charge that is double the weight of the ordinary neutron, trigger of the fission atomic bomb.

Tritons, hearts of hydrogen isotope three, were flung at other tritons by an electro-



TWO IN ONE—A new type of X-ray machine that can take all the upper or lower teeth on one film is explained by Dr. Robert J. Nelson to John Kumpula at the University of Washington School of Dentistry. With the patient in a fixed position in the dental chair, the machine moves and the chair revolves slowly in making the X-ray picture. Heretofore 18 pictures were required for a full X-ray and one-half hour, as compared to 10 minutes with "panographic radiography," was required for taking them.

static generator atom-smasher. Out of the two tritons' exploding and combining come one atom of ordinary helium and the dineutron, which lives for a very short time and then becomes two ordinary neutrons. Although a considerable amount of energy is released, this is not believed to be the most likely of the reactions that would be used in the hydrogen or H-bomb.

An unannounced group at the bomb laboratory, represented by Harold M. Agnew, told the American Physical Society in Washington about this discovery.

Tritium is made in atomic piles, competing with plutonium manufacture needed

for fission or A-bombs. It is three times the weight of ordinary hydrogen. It is radioactive and decays when left to itself, half of it disappearing in about 30 years.

The dineutron, now proved to exist, is analogous to double-weight hydrogen or deuterium weighing the same.

A strange new kind of heavy helium, mass five instead of the usual four, has been found in the tritium-tritium reaction by scientists at the Canadian atomic energy laboratories at Chalk River. Helium five decays into ordinary helium and a neutron shortly after formation.

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States Technical Conference on Air Pollution.

"I would not have you conclude that city air causes cancer in man," Dr. Scheele said. He reported, however, that a single injection below the skin of these soluble tar particles produced malignant tumors (cancer) in mice.

The substances were collected from the air in streets, homes, offices and schools. Analysis at the Public Health Service's National Cancer Institute "have at least raised serious questions as to the role of community air pollution in the causation of cancer," Dr. Scheele stated.

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ENGINEERING

Smog Control Advantages

► A LESSON for other cities is contained in the accomplishments of Los Angeles during the past few years in lessening the eye-and-throat irritation caused by chemical wastes in atmospheric smog. Salvaging the chemicals, in the industrial plants where made, is producing valuable products.

Some 822 tons of sulfur dioxide formerly entered the Los Angeles atmosphere each day, the American Society of Civil Engineers was told by Gordon P. Larson, director of the Los Angeles County Air Pollution Control District. Sulfur is now being produced in one plant at the rate of 50 tons a day from gases that were formerly burned to produce 100 tons of sulfur dioxide in the atmosphere.

The sulfur dioxide in the Los Angeles overcast condition known as smog is released by refineries, chemical plants and the burning of fuel oil by other industries. Coal is not to blame since not much coal is used in the region. The sulfur chemical quickly oxidizes in the air to form sulfuric acid. It is the acid that is particularly irritating to human eyes and throats.

In the two years since the pollution control drive began, sulfur dioxide pollution

has been much lessened, Mr. Larson indicated. At the beginning of the drive some 100 tons of metallic oxide fumes were being discharged into the air.

Dusts and oil mists add their share to the pollution from rock processing plants, milling, coffee roasting, manufacturing of roofing materials and paint spraying operations, he said. The total number of all sources amounts to many thousands.

Control is by voluntary action on the part of industries, or by court action. Over 300 violators a month are being cited in the drive to eliminate Los Angeles smog, he stated.

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MEDICINE

Tar in Air May Cause Cancer

► A POSSIBLE cause of cancer may be particles of tar which constitute 10% of the dust in ordinary city air, Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, said at the United

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Question Box

MEDICINE

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What is the mystery disease which is being treated by cortisone? p. 290.

What is the score for ACTH in TB treatment? p. 295.

What method is now being used to detect cancer of the stomach? p. 291.

Photographs: Cover, New York Zoological Society; p. 291, James O. Sneddon, Office of Public Information, University of Washington; p. 293, USAF Air Materiel Command; p. 294, the Texas Company; p. 295, Hamilton Wright; p. 304, Tennessee Eastman Corporation.

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PHYSICS

How is present physics lopsided? p. 300.

PSYCHIATRY

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PSYCHOLOGY

What are the seven factors in temperament? p. 300.

PSYCHIATRY

Atropine for Mentally Ill

Poisonous drugs may be future weapons in the fight against mental disease. Cases of recovery from mental illness after acute physical illness suggested their use.

► **POISONOUS** drugs such as belladonna may be the weapons of the future against mental disease.

Improvement in 77 of 188 mentally sick patients as a result of doses of one such drug was reported by Dr. Gordon R. Forrer of the Ypsilanti, Mich., State Hospital at the meeting in Detroit of the American Psychiatric Association.

Eighteen patients showed marked improvement immediately after treatment. The improvement seemed to continue for two to three months after the treatment had been stopped.

The drug Dr. Forrer used is atropine, or belladonna, as it is sometimes called. This is the same drug which doctors drop in the eyes before examination for eyeglasses and which is also given, in small doses, to relieve spasm as in asthma, constipation and whooping cough among other conditions.

Dr. Forrer gave 30 to 60 times the conventional dose to the mental patients by injection into the muscles. The patients be-

came somewhat restless, confused and approached a semi-comatose state. Each patient, on the average, got 20 treatments. There were no serious complications and no permanent organic damage, though one patient got pneumonia and one had a return of ear trouble.

Atropine itself may not be the poisonous drug finally selected for treatment of mental disease, if any such drug does become accepted treatment. Dr. Forrer stated that several other drugs, promising because of their poisonous properties, are being investigated.

The idea that poisonous drugs might be helpful in mental sickness is based on the observation made from time to time that recovery from mental illness might occasionally follow another, acute illness occurring during the mental illness. Such recovery or temporary improvement, it was thought, might be due to the poisoning during the acute illness.

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an enemy could eat it as easily while it was pretending to be dead.

Another mystery of the 'possum concerns its disappearance for several million years from America. The 'possum was here 70 million years ago, disappeared, then reappeared. Unlike most other mammals, the 'possum has changed little in 70 million years.

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MEDICINE

Virus Mystery Period Probed

► A 25-MINUTE mystery period in the life of certain viruses is being probed by University of Chicago scientists in Chicago. They hope solution of the mystery will give clues useful in the fight against infantile paralysis and other virus-caused diseases.

The mystery is what happens during the 25 minutes after bacteriophage, which is a virus, infects a bacterium, which is a slightly larger micro-organism, or "germ."

After the mysterious 25 minutes during which nothing seems to be happening, the bacterium suddenly bursts open and as many as 1,950 new viruses are set free.

Probing this mystery are Drs. Frank W. Putnam, Earl A. Evans and Lloyd Kozloff. Dr. Putnam reported in the journal, *SCIENCE* (May 5), that he used a force 20,000 times stronger than gravity to measure bacteriophage which is so small that 250,000 living units of it could be crowded into a single inch.

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WILDLIFE

Captive Opossums Bred

► **THE OPOSSUM**, as familiar to the American scene as log cabins and maple syrup but regarding whose personal life there remains much mystery, is finally being bred in captivity.

This feat is being accomplished by Harold C. Reynolds, of the University of California Museum of Vertebrate Zoology.

Previous attempts to breed the opossum have been abandoned, the reasons for failure being the animal's cannibalism and its secretive, nocturnal personal habits.

Mr. Reynolds, who now has third generation opossums grown in captivity, is believed to be the first to have witnessed the birth of an entire litter of the animals, and he apparently is the first who has been able to observe the animal's behavior extensively.

The scientist has found that many of the folk tales about opossums are not true. It is not clever and cunning—indeed, it is extremely stupid. It cannot swing by its tail. The mother 'possum cannot arch her tail over her back in order for the young to ride holding with their tails to hers.

Mr. Reynolds believes that the opossum may become an extremely important laboratory experimental animal, now that the technique of breeding in captivity has been mastered.

The opossum is a marsupial, Reynolds

pointed out. The young, still in embryological stages, are easily available in the mother's pouch. Therefore it should be possible to conduct many more varied embryological studies with this animal, because of the easy access to the embryo.

Mr. Reynolds said that the embryo-like young leave the mother's womb after about 13 days gestation. At this point the young are about half an inch long and weigh only 13/100ths of a gram. They make their way to the pouch, where they remain for about 60 days, being weaned about a month later. Sometimes the litter is so large that some of the young are destined to die. In the pouch there are but 13 teats, and only this number of young can survive. Mr. Reynolds has witnessed the birth of as many as 21 in a litter.

So small are the young at birth that one would weigh only 1/14,000th as much as the mother. If a human baby were proportionately smaller at birth he would weigh only one-seventh of an ounce.

Mr. Reynolds says it is a puzzle as to how the primitive 'possum has been able to survive. He speculates that it may be a superior ability to adjust its body temperature and to the fact that it apparently has few natural enemies. The animal's penchant for "playing 'possum" would help little, since



PLIABILITY PLUS — The bottle made of ethylene can take a terrific beating and literally bounce back undamaged. Its skin-burning acid contents will stay securely confined within the bottle throughout the roughest flight. Such containers are now recommended when acids are transported by air.

MEDICINE

Cortisone Cure Lasting

► SOME stay well for months now even after the stopping of the cortisone treatment that amazingly remedied their crippling rheumatism.

This hopeful news in the scientific battle against arthritis was given to the National Academy of Sciences in Washington by Dr. Philip S. Hench of the Mayo Clinic, cortisone's co-discoverer.

One patient has been well for 14 months after the wonder drug injections were stopped. Several more have gone months without the pains and crippling returning.

When cortisone, one of the adrenal gland hormones, first showed its power, doctors feared its use would have to be continued to keep the patients well.

Why the improvement lasts in some patients and not in others is a mystery. Whether the well-being will continue indefinitely cannot be answered.

There are prospects of ever-increasing supplies and lower costs of both cortisone and ACTH, the pituitary gland hormone that stimulates the body to produce its own cortisone.

Better ways of using cortisone and ACTH have been learned in the past year since cortisone was first announced. Big doses at first to get the best effect at once with smaller doses, sometimes only three times a week instead of daily, are now advised.

Reports of side-effects, ranging from masculinization of women to diabetes, have scared many physicians and patients. Such fears are unfounded, it now appears. The side-effects have not been so bad and few patients have experienced any. Reducing the salt intake slightly, giving potassium chloride by mouth and in one case intermittent doses of a female hormone have overcome the side-effects, Dr. Hench reported at the meeting of the National Academy of Sciences.

Cortisone is "a fireman, not a carpenter," Dr. Hench pointed out, and cannot be expected to overcome tissue damage in arthritic joints or rheumatic hearts. But given early in acute rheumatic fever, followed by penicillin, it can prevent the heart damage from this disease, Dr. Hench hopes.

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MEDICINE

T. B. Patients Exercise

► STRENUOUS exercise after having three or four ribs removed may sound like a drastic procedure but it is speeding tuberculosis patients to recovery.

"Resistive exercises," meaning exercises done against force such as weights or pulleys, is the name of this new form of treatment developed for tuberculosis patients by Mrs. Florence S. Linduff, physical therapist of the Veterans Administration.

In a group of 66 patients started on these exercises as soon as possible after the rib removal operation, 71% had sputums free of TB germs one year after the operation. In a similar group of 80 patients who did not have the exercise treatment, only 55.4% were "sputum negative" one year following the rib operation.

The rib-removing operation is done to collapse the affected lung for the rest needed for recovery from tuberculosis. When a number of ribs are removed there is a tendency to deformity, such as spinal curvature. The resistive exercises were started with the object of preventing or correcting these deformities. Mrs. Linduff instituted them in the VA program after seeing them used on a small scale in Army hospitals during the war.

The exercises, however, turned out to have benefits beyond preventing deformity. Patients doing them improved in every way.

The exercises were demonstrated by Drs. James D. Murphy, B. B. Bagby, Jr., and

Frank P. Ilasi and Mrs. Ila J. Arhein, physical therapist, from the VA hospital at Oteen, N.C., at the National Tuberculosis Association meeting.

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AERONAUTICS

Wings of Bomber Change Position in Flight

► ABILITY to fly from combat area fields marks a new powerful light bomber for the U. S. Air Force, built to ease the path of advancing troops. It has now made its maiden flight in Baltimore, Md. at the airport of the Glenn L. Martin Company, its builder, and is ready for further tests.

Its ability to make a quick take-off with a short run is due to wings whose position can be changed while the plane is in flight. The leading edges of its wings can be raised or lowered to change the angle of attack.

A nose-up position for the plane is not necessary for take-off. Instead, the angle at which the wing meets the air is adjusted by the pilot so that the required amount of lift is obtained while the fuselage remains practically horizontal.

Performance data for the new plane, the Air Force XB-51, are still secret. It is a jet-propelled craft, powered by three General Electric J-47 engines. Two of the engines are mounted on the lower front sides of

the fuselage, the third is carried internally in the rear of the fuselage. Wings are of the thin, swept-back type.

This speedy bomber was developed specifically to work with ground troops by destroying enemy installations ahead of an advancing army, particularly those within 100 or 200 miles. It is a two-man plane, pilot and navigator. Its possible high speed is indicated by the fact that it is equipped with "ejection" type seats.

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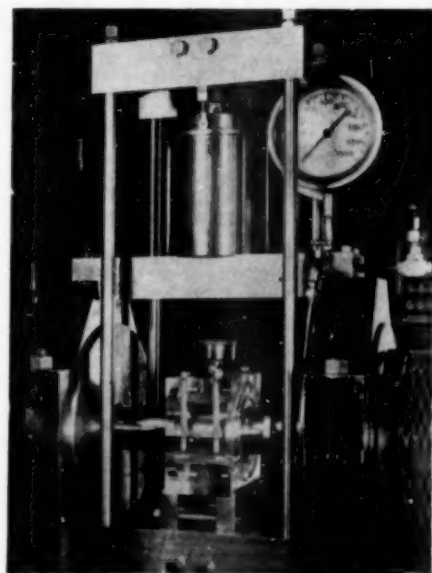
On This Week's Cover

► DERBY'S Woolly opossum strikes an unconventional pose as shown on this week's cover. Its normally pink ears turn a rose color when it is annoyed or gets excited. This little animal comes from Peru and Ecuador northward to Central America.

The opossum is a mammal which belongs to the subclass marsupials. They bear their young alive in a very immature state, the development being continued in the abdominal pouch. A specially developed structure connects the windpipe with the nasal cavity in the new-born animal and makes it possible for the mother to force milk through the teat and into the esophagus without interrupting its breathing.

Small, nocturnal animals, they feed on insects, birds and fruit. The best known species of the type-genus is *Didelphys virginiana* and is very common in the United States (See SNL, May 13, p. 293).

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TRANSPARENT RESEARCH—A transparent plastic bearing for lubrication studies enables engineers to see and photograph the behavior of oils and greases in bearings under different loads and speeds. Bright red dye is mixed with the lubricant so that the lines of the flow can be followed.

MEDICINE

ACTH against TB

Advanced TB patients show amazing response to treatment with ACTH; however, the patients relapsed when ACTH was stopped. Its use in TB treatment is a big question.

➤ ACTH, wonder drug for arthritis, produces amazing results in tuberculosis as well.

Four patients were practically hopelessly sick with advanced TB. Tuberculous ulcers on the larynx, or voice box, made it impossible for them to talk except in a hoarse, queer whisper.

ACTH was given to them. Within six to eight hours they started getting better. Fever disappeared completely. Appetite and strength and ability to speak improved markedly. Within 24 hours the doctors could see improvement in the ulcers on the larynx.

But the patients were not cured. As in arthritis, they relapsed when the ACTH was stopped. And one of the patients died.

"At this moment no one can say whether the three surviving patients are better off than they would have been without ACTH," declared Dr. Ralph Tompsett of Cornell Medical College and New York Hospital in reporting the four cases at the meeting in Atlantic City, N. J., of the American Society for Clinical Investigation.

One of the patients was given streptomycin after the ACTH was stopped. Progress in this patient was just what would have been expected without the ACTH.

The most that can be said for ACTH in tuberculosis at present was summed up by Dr. Tompsett as follows:

"If one could develop means of maintaining the benefits that are immediately obtained, at least the patients would feel better while they are getting over their disease."

Dr. Tompsett does not consider ACTH or cortisone, which was tried in one case, as even treatment for tuberculosis, much less cure.

TB patients might be better off without the potent hormone. What the drug does is, in general terms, to cancel the body's reaction to the tuberculosis infection. That, Dr. Tompsett pointed out, may not be good. The fever, the formation of tough fibrous tissue in the lungs, and other body responses to the infection may be a good thing.

Pondering this question of whether ACTH is making things better or worse for the patient is keeping the doctor awake nights, he hinted. While this question remains unanswered, only hopelessly sick patients are likely to get any of the hormone.

X-ray pictures of the patients' lungs look "different" after ACTH, but the changes are not very marked, and the doctors do not know yet what they mean.

Working with Dr. Tompsett on the stud-

ies reported were Drs. Charles LeMaistre, Carl Muschenheim and Walsh McDermott. Previously, studies of ACTH in tuberculosis had been made by Drs. Smith Freeman, Jennings Fershing, C. C. Wang and L. C. Smith of the Veterans Administration's Hines Hospital and Northwestern University Medical School, Chicago.

From these studies and others of the drug in pneumonia and infantile paralysis, it appears that ACTH is giving doctors a new tool for learning more about germ-caused diseases and possibly for forging new weapons against them.

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METEOROLOGY

Melting Popsicle Weather For Popsicle Season

➤ THE nation's weather in May will be somewhat like a melting popsicle—warm on the sides, cooler in the middle—according to the U.S. Weather Bureau's 30-day extended forecast.

Temperatures averaging warmer than the seasonal normal were predicted east of the

Appalachians and also along the Pacific coast. But the central portions of the country will be cooler than normal.

Coolest weather is expected in the Northern Plains states and western lake region. That is the area where melting snows and heavy precipitation in rain or snow have produced flood or near-flood conditions, particularly in North Dakota's Red River Basin.

The Weather Bureau's forecast indicated the north-central portion of the country will get at least as much rainfall as the seasonal normals for the month of May.

In that area, normal means between 1.5 and 3 inches of rain for the 30 days, Jerome Namias, chief of the extended forecast section said.

If the rainfall in May is distributed evenly, it would not make the present flood situation more critical, said James S. Sweet of the Weather Bureau's rivers division. He estimated that a solid inch of rain over a wide area in a 24-hour period would be needed to make the rivers keep on rising, producing new floods.

Worried farmers in the dry dust bowl area of the 1930's could draw hope from the 30-day forecast for May. It predicted frequent and abundant showers over a wide belt extending from Texas and Colorado eastward through the southern plains, Ohio Valley, middle Atlantic states and New England.

Subnormal rainfall is expected in the Pacific coast states and in Florida.

Elsewhere, amounts equal to or greater than normal are expected.

Science News Letter, May 13, 1950



CHIPS OFF THE OLD BLOCK—There are many more than the three Great Pyramids as the above photo shows. All are over 5,000 years old and were the tombs of ancient Pharaohs. The big pyramids in the background are (left to right) Mycerinus, Chephren and Cheops (largest—451 feet).

PSYCHIATRY

Hypnotism Spots Epileptic Whose Fits Are Neurotic

► HYPNOTISM can be used to spot the patient who seems to have epilepsy but whose "fits," or seizures as doctors term them, are really due to a psychoneurotic condition and not to true epilepsy.

And, incidentally, it is the intelligent rather than the mentally slow who hypnotize well.

These findings were reported by Lt. Col. Donald B. Peterson, Maj. John W. Sumner and Maj. Gordon A. Jones, psychiatrists and clinical psychologist at Fitzsimons Hospital, to the American Psychiatric Association meeting in Detroit.

Under hypnotism, the Army doctors found, patients whose fits had a neurotic basis could recall every detail of their surroundings during the seizures. Patients with true epilepsy could not. Brain wave studies bore out these findings.

Using hypnotism to sort the true from the pseudo-epileptics speeds diagnosis and the start of proper treatment. As a result, 80% of the patients with pseudo-epilepsy were fit for Army duty after short psychiatric treatment.

Science News Letter, May 13, 1950

GEOPHYSICS

Discover New Mountain In Pacific Ocean

► A NEWLY-DISCOVERED mountain no one will ever see was described to the American Geophysical Union in Washington by Rear Admiral Leo O. Colbert, retiring director of the U.S. Coast and Geodetic Survey.

More than 8,000 feet high, it rises from the bottom of the North Pacific ocean about 800 miles northwest of Seattle. The Survey calls such ocean-bottom mountains "seamounts."

This one was charted by survey depth finders at a place where the floor of the Pacific is 2,100 fathoms (12,600 feet) below the surface. The top of the mountain is approximately 4,000 feet down.

Science News Letter, May 13, 1950

METEOROLOGY

Super-Small Sea Salt Starts Rain Falling

► Newly-discovered rainmakers are tiny unseen bits of sea salt, floating high in the air even where the ocean is far away.

Electron microscope photographs of tiny atmospheric particles around which raindrops form were shown to the American Geophysical Union meeting in Washington by Pennsylvania State College meteorologist C. L. Hosler.

Some of the particles were only one-millionth of a centimeter in diameter.

The work at Penn State has shown there are many more types of such atmospheric nuclei than scientists previously thought. In addition to the tiny crystals of salt, blown hundreds of miles inland from evaporating ocean spray, magnesium chloride particles, and silica dusts so fine they cannot be seen by ordinary microscopes have been identified.

Scientific attention has been brought to bear increasingly in recent years on the condensation mechanisms by which rain is formed. One result was the discovery that rain could sometimes be "made" by seeding clouds with dry ice or crystalline particles.

Work with the electron microscope has shown that the shape of the individual particle has a great deal to do with whether a rain-drop will form around it, Mr. Hosler said.

The Penn State research is not the first along these lines, he said. A German scientist was studying condensation particles during World War II—until a bomb dropped on him.

Science News Letter, May 13, 1950

VETERINARY MEDICINE

Elderly Dogs Benefit From Better Anesthetics

► NEW anesthetics are helping old dogs live longer. They were described at the annual convention of the American Animal Hospital Association in Denver, Colo.

Dr. Dwight A. Smith, professor of veterinary medicine at Iowa State College, said procaine hydrochloride is allowing operations to be performed on aged dogs that were risky or out of the question with anesthetics formerly available.

The medical treatment of aged pets in weak or failing health is called "canine geriatrics."

Science News Letter, May 13, 1950

BOTANY-PHYSICS

Plant Gives Signals Much Like Nerve Impulses

► ELECTRICAL signals remarkably like human nerve impulses have been charted in a Carolina plant that eats insects.

The plant is Venus's-flytrap. Botanists call it carnivorous because it reputedly can digest insects that buzz into its waiting jaws.

Its life-like electrical impulses, called "action potential," are described by Dr. Otto Stuhlman, Jr., and Edgar B. Darden, University of North Carolina physicists, in the journal, *SCIENCE* (May 5).

They studied the phenomenon in much the way a doctor stimulates an exposed animal or human nerve by tickling it. Electrical connections were made on the leaves of the flytrap. Then a trigger hair inside the jaws was bent with a fine glass hook. Up went the line on the electrical recording instruments.

Science News Letter, May 13, 1950

IN SCIENCE

PSYCHIATRY

Muscular Type Has Better Odds for Mental Recovery

► THE big-boned, muscular type of person has a much better chance of getting over serious mental disease, if he develops it, than those with low muscular development.

This is one finding from the first systematic attempt to relate the outlook for recovery from mental illness with body type or build. The study was reported by Drs. Nathan S. Kline and Ashton M. Tenney of the Veterans Administration Hospital at Lyons, N.J., to the meeting in Detroit of the American Psychiatric Association.

The study was made on over 1,000 patients in the order in which they were admitted to the hospital. One group of doctors rated the patients, from photographs, according to body type. Another group of doctors made the psychiatric diagnosis. The two findings were then correlated.

The big-boned, muscular type, the study also showed, was more likely to be paranoid, with delusions of grandeur and of persecution. This form of mental disease develops slowly.

The patients with thin, fragile body types were more likely to develop hebephrenic schizophrenia, which comes on in the early teens and is marked by rapid deterioration, hallucinations, senseless laughter and silly mannerisms.

When the findings from the study have been further analyzed, the scientists reported, they may give clues to the nature of the response to electroshock and insulin shock treatments, to problems of chronic alcoholism, to the nature of psychiatric symptoms and may possibly show a relation to brain wave findings.

Science News Letter, May 13, 1950

MEDICINE

Brain Waves Help Detect True Deafness

► USE of brain wave records to distinguish true organic deafness from "hysterical" deafness due to a psychoneurotic disorder was reported by Dr. Henriette Lowenberg Wayne of the Bronx, N.Y., Veterans Hospital.

The brain wave records are taken while the patient sleeps. If he has the "hysterical" kind of deafness, the brain reacts to sounds, as shown on the brain wave record. If he has true organic deafness, there is no brain reaction to sound.

Science News Letter, May 13, 1950

NE FIELDS

MEDICINE

Infra-Red Freeze-Drying Yields More ACTH

► **TRIPLE** the present amount of ACTH for arthritis and other patients will soon be produced, F. W. Specht, president of Armour and Company, predicted in Chicago.

The increase in production, now 30 times that of one year ago, and a recent 50% price cut in the Armour product depend in part on a new freeze-drying apparatus which uses infra-red rays as a heat source.

The new method not only speeds drying 10 times but also reduces loss of potency that resulted with the previous drying method. The method was developed by Ralph F. Colton of the Dry Freeze Corporation on the basis of ideas originally evolved during the war in research on drying blood plasma. Dr. Sidney O. Levinson and Dr. Franz Oppenheimer, physicists of Michael Reese Research Foundation, are credited with the original ideas for plasma drying now adapted to ACTH production.

Science News Letter, May 13, 1950

GEOPHYSICS

Rain of Meteors May Explain Carolina Craters

► **AFTER** 17 years, geologists are still arguing the mysterious case of the Carolina "bays." They are just as stumped as airline passengers who see the miles of shallow, crater-like depressions in the coastal plain of North and South Carolina.

A spectacular shower of meteorites bombarding the continent in prehistoric times is the best theory offered so far, Dr. William Schriever of the University of Oklahoma told the annual meeting of the American Geophysical Union in Washington. It probably happened while the Carolinas were still under the Atlantic Ocean, he said.

Dr. Schriever denounced as "untenable" the theory of a complex chain of events, started by great, bubbling prehistoric artesian springs, which Columbia University's late, top-ranking geologist, Prof. Douglas Johnson, outlined in an authoritative book in 1942.

Using Prof. Johnson's own 29 requirements for an adequate theory, Dr. Schriever said the idea of meteorites, first advanced by himself in 1933, is still the "least unsatisfactory."

The missiles from space could have struck the coastal plain while it was still under the shallow sea, he said. Centuries of waves would have filled the craters with sediment. Then, when the plain rose above water, the loose fill in the craters could have settled

like earth in an improperly-made grave.

To learn whether great iron-stone meteorites are actually buried there, and before a completely satisfactory theory can be presented, subsurface investigations must be made, Dr. Schriever said. Such tests will be helped not at all by the fact that most of Carolina's mystery holes are now lakes or tangled, soggy swamps.

Science News Letter, May 13, 1950

PSYCHIATRY

Normal Persons Better Liars than Neurotics

► **NORMAL** persons are better liars than neurotics, Dr. Frederick C. Redlich of Yale University School of Medicine told members of the American Psychiatric Association meeting in Detroit.

The normal persons also have greater ability to resist questioning when under the influence of hypnotic drugs, sometimes called truth serums.

The findings are from an experimental investigation in which 10 persons were asked to tell an interviewer about incidents which made them feel ashamed or guilty. They were then asked to tell a "cover story" about the same incidents to another interviewer.

The interviewer then tried to "puncture" the "cover story" while the person who told it was under the influence of a hypnotic drug, sodium amytal. Of the 10 persons, four were able to stick to the cover story while under the drug.

Working with Dr. Redlich on this investigation were Dr. Leonard J. Ravitz and a legal authority, George Dession.

Science News Letter, May 13, 1950

DENTISTRY

Penicillin Tooth Powder Helps Anti-Caries Fight

► **A PENICILLIN** tooth powder, not yet on the market, may help in the fight against tooth decay.

After a two-year trial, a group of 235 elementary school children in Walpole, Mass., had an average of 54% less tooth decay than a similar group of 117 children who did not use the penicillin powder. The results are reported by Dr. H. A. Zander of Tufts College Dental School in the *JOURNAL OF THE AMERICAN DENTAL ASSOCIATION* (May) in Chicago.

The Journal's editor warns against efforts to get this powder on the market too soon for the following reasons:

1. More tests of the product's safety are needed.

2. Results may not be as good when used by the general public in the "ordinary haphazard" method of brushing the teeth. The good results were obtained in children whose toothbrushing was carefully supervised.

Science News Letter, May 13, 1950

MEDICINE

TB Most Important Germ-Caused Disease

► **"TUBERCULOSIS** is today the most important disease of the human race to be caused by a 'germ,'" Dr. H. Corwin Hinshaw of Stanford University School of Medicine, San Francisco, declared in a radio program.

The death rate from this disease is fortunately decreasing, but there is an actual increase in the number of known cases and "most heartbreaking is the fact that so many victims are young people in their teens, twenties and thirties," he stated.

"The average patient dying of tuberculosis dies 30 years before his time," Dr. Hinshaw said.

Dr. Hinshaw spoke as guest of Watson Davis, director of Science Service, on adventures of Science radio program presented over the Columbia Broadcasting System.

Mr. Davis' other guests on the program were Dr. Kirby S. Howlett, Jr., assistant superintendent of Laurel Heights Sanatorium, Shelton, Conn., and Dr. Nicholas D'Esopo, chief of the medical service, Veterans Administration Hospital, Sunmount, N.Y.

Science News Letter, May 13, 1950

MEDICINE

New Test May Aid Stomach Cancer Fight

► **A SIMPLE** test that may help in the fight against stomach cancer was announced by Drs. Harry L. Segal, Leon L. Miller, John J. Morton, Henry Y. Young and Mrs. Leaf Drake of the University of Rochester School of Medicine at the meeting in Atlantic City, N.J., of the American Gastroenterological Association.

The test is a chemical test for stomach acidity. About 65% of patients with stomach cancer have no acid in their stomachs and a large percentage of patients with no acid tend to get cancer. Pernicious anemia patients have a similar lack.

Because of its simplicity, the new test might be used to screen whole populations, picking out the acid-less ones for further careful X-ray studies to detect stomach cancer in time for cure. Lack of symptoms until the disease is far advanced is one big reason why stomach cancer is a leading cause of cancer deaths.

With the new test, the patient does not have to swallow a stomach tube, which is the present method for checking on stomach acidity. All he swallows is about half a teaspoon of an "indicator compound," a cation chemical containing a quinine derivative. Tests of the urine, collected hourly for two or three hours after taking the chemical, tell whether or not the patient has acid in his stomach.

Science News Letter, May 13, 1950

GENERAL SCIENCE

A Better World or No World

Dr. Millikan in his autobiography describes the way to a better world. Man must utilize his intelligence in the promotion and application of the good way.

By ROBERT A. MILLIKAN

Dr. Millikan, dean of American physicists, in concluding his autobiography just published, discusses the two supreme elements in human progress. These excerpts from THE AUTOBIOGRAPHY OF ROBERT A. MILLIKAN (Copyright 1950 by Prentice-Hall, Inc.) defines the scientific approach to religion of this Nobelist who continues his researches at the age of 82.

► NEVER in history has mankind faced a situation which forced every person on earth to ask himself so insistently the question, "How can I help to make a better world?" for we know, as never before, that unless by our joint efforts we do find a way specifically to put an end to world wars and their mass killings the human race has the possibility, and indeed the likelihood, of destroying itself; so that the choice is now between a better world or no world.

That conviction had come to most intelligent and informed men before the advent of the atomic bomb.

I heard one of our foremost industrialists—a man who is in no sense a sentimentalist, rather a "hard-boiled" realist—in commenting in 1944 upon the immense cost of the war and the terrific destruction wrought by our bombing raids over German cities, speak as follows:

"No nation on earth is rich or powerful enough to keep this up and survive even though victorious, to say nothing of the utter ruin that is coming to Germany with practically all her cities being reduced to rubble heaps."

The key, then, to my own answer to the question I have raised is found in the following statement: Human well-being and all human progress rest at bottom upon two pillars, the collapse of either one of which will bring down the whole structure.

Pillars of Progress

These two pillars are the cultivation and the dissemination throughout mankind of (1) the *spirit* of religion, (2) the *spirit* of science (or knowledge).

In the long sweep of evolutionary history from amoeba up to man in 1950, what we call spirit or soul—the latest and the most important element in the evolutionary process of creation—first began to appear in and evolve from the animal world when a being developed who began to bury with the bodies of his dead the implements that he thought might be needed in a world beyond the grave.

That was a supreme moment. For can one imagine a mere animal thinking about a future life?

Dawn of Divine Thinking

Breasted calls the time at which this kind of an idea first came into a brain "the dawn of conscience." I shall call it also the dawn of religion, for with all the evolution that religion has undergone since its very crude beginnings at that far distant date, our word conscience, which implies a sense of personal responsibility—a consciousness that "I ought or I ought not," is today very closely identified with what I mean by the spirit of religion.

But in this long evolution of religion since that time, the word religion has, in fact, had all kinds of extraneous ideas associated with it or grafted upon it, some good, some very bad.

It has meant, and still means in some minds, crude superstition; it has meant all kinds of man-made theologies; it has meant bigotry and intolerance and wars and inquisitions.

But none of these things has, or should have, anything to do with what I call the essence of religion in the United States today.

I want, therefore, to get rid of all these excrescences and to get down to the essential thing, and we can do it, I think, as follows:

We have in this country dozens of different religious sects and just as many different theologies, all necessarily wrong in some particulars since there obviously can be but one correct theology and certainly no one knows what that is; but there is just one element which I find common to all these religions and I know of no other way to find the essence, at least, of the Christian religion than to see what is that common element that all of them consider indispensable.

That common element is found, I think, simply in the life and the teachings of Jesus—in the attitude of altruistic idealism (the psychologist may want to call it extrovertness, the common man simply unselfishness) which was the sum and substance of His message.

Common Element in Religion

He states it in the Golden Rule, "Whatsoever ye would that men should do to you do ye even so to them."

You are the sole judge of what you ought to do. For to man alone of all creation has been given the power of choice between

good and evil, and it is in the exercise of that choice that man fulfills his great mission on earth.

Further, he obviously cannot choose the good without having the possibility of choosing the evil way, and with that choice open, if history teaches us anything then it is to be expected that here and there a John Dillinger or an Adolf Hitler will be found who will choose the evil way.

Is not, then, the following the real answer to the old problem of the abuse of knowledge?

The job of civilized man is not to try to suppress the growth of knowledge, but rather to exercise his intelligence, his own growth in knowledge, to stop the depredations of the Dillingers and the Hitlers by eliminating them if necessary or by other means if he can find such, and at the same time to win as large a fraction of mankind as possible to the free choice of the good way instead of the evil way . . .

Dr. Millikan Defines God

Someone asks, "Where does the idea of God come in? Isn't it a part of religion?" Yes, I think it is, and I should like to reply in three different ways to the question here raised.



NOBEL PHYSICIST—Born the second son of a country minister in Illinois in 1868, Robert Andrews Millikan won the Nobel Prize in Physics in 1923 for his historic measurement of the electron's charge. For many years head of the California Institute of Technology, he has cooperated with national and international organizations in both war and peace.

My first answer is taken directly from Holy Writ and reads: "No man hath seen God at any time . . . If a man says 'I love God and hateth his brother he is a liar: for he that loveth not his brother whom he hath seen, how can he love God whom he hath not seen?' In other words, one's attitude toward God is revealed by and reflected in his attitude toward his brother men.

My second answer is taken from Dean Shailer Mathews, head of the Baptist Divinity School of the University of Chicago. To the inquiry, "Do you believe in God?" he replied, "That, my friend, is a question which requires an education rather than an answer."

My third form of reply is my own and reads: I do not see how there can be any sense of duty, or any reason for altruistic conduct, which is entirely divorced from the conviction that moral conduct, or what we call goodness, is somehow or other worthwhile, that there is Something in the universe which gives significance and meaning, call it *value* if you will, to existence; and no such sense of value can possibly inhere in mere lumps of dead matter interacting according to purely mechanical laws.

Thousands of years ago Job saw the futility of finite man's attempting to define God when he cried, "Can man with searching find out God?" Similarly, wise men ever since have always looked in amazement at the wonderful orderliness of nature and then recognized their own ignorance and finiteness and have been content to stand in silence and in reverence before the Being who is *immanent in Nature*, repeating with the psalmist, "The fool hath said in his heart, there is no God." Einstein, one of the wisest of modern men, has written:

"It is enough for me to contemplate the mystery of conscious life perpetuating itself through all eternity, to reflect upon the marvelous structure of the Universe which we can dimly perceive, and to try humbly to comprehend even an infinitesimal part of the *intelligence* manifested in nature."

I myself need no better definition of God than that, and some such idea is in all religion as a basis for the idea of duty.

Science News Letter, May 13, 1950

MEDICINE

More Effective Cancer Treatment with Hormones

► SEX hormones may make radioactive phosphorus 15 to 20 times more effective in treating cancer. Studies suggesting this were reported by Dr. Saul Hertz of Boston at the meeting in Atlantic City, N. J., of the American Society for Clinical Investigation.

Encouraging results in treating leukemia and a disease in which there are too many red blood cells, polycythemia, with radioactive phosphorus aroused hope of using this for treatment of cancer of other organs, Dr. Hertz pointed out.

Heretofore this hope has unfortunately not materialized because except for certain brain and breast cancers, the cancer did not take up enough more of the radioactive phosphorus than normal tissue. Hope of treating cancers with radioactive chemicals instead of with X-rays or radium had been based on the idea that the cancer would take up more of the radioactive chemical than the normal tissue. In that way more cancer-killing radioactivity could be delivered directly to the cancer.

By giving male and female hormones to cancer patients in advance of the radioactive phosphorus, a concentration of the radioactive chemical in the cancer tissues of 15 to 20 times was obtained compared to a concentration of two to three times by normal control tissues. These studies were made, Dr. Hertz reported, with hopeless cases of advanced cancer that had spread from its original place in the body.

Science News Letter, May 13, 1950

AERONAUTICS

Tiny Planes Without Pilots Are Targets

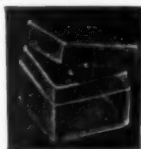
► SPEEDY flying targets for Navy gunnery practice, now ready for testing, are 10-foot tiny airplanes without pilots but powered by ram-jet engines and guided from afar by radio control.

They are the Navy's KDM-1 target drones, and were constructed by the Glenn L. Martin Company. In use, they are taken aloft by a mother plane, suspended near a wing tip. When proper launching speed and altitude are obtained, the engine is started and the target released.

From then on the drone is controlled from afar entirely by radio while its progress is watched on a radar screen. Controls may be preset before launching, but these may be overridden by distant radio.

Science News Letter, May 13, 1950

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PHYSICS

Electronics May Tell If Eggs Fertile

► ADVANCES in electronics may soon produce a machine U. S. hatcherymen have long dreamed of owning—a device to tell whether a freshly-laid egg is fertile.

The possibility was described to the Washington section of the Instrument Society of America by Karl Norris, an engineer at the Department of Agriculture's sprawling research center in Beltsville, Md.

Assuming that the egg comes before the chicken, farmers have long scratched their heads and ground their teeth over the question: Which egg? The only way to tell is by trial and error—incubate eggs at random. Those which aren't fertile must be thrown away, an expensive procedure.

Scientists suspected as long as 50 years ago, however, that a tiny difference in response to electric current could show whether an egg is fertile. But instruments which could detect so small a difference were non-existent.

All that is needed, Mr. Norris said, is a practical device which can measure a few millionths of one volt. It is possible to develop such an ultra-sensitive instrument today, he said.

Science News Letter, May 13, 1950

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PHYSICS

Physics Becomes Lopsided

► **PHYSICS**—which is normally the study of crystals, X-rays, electricity, and the world about us—has become lopsided and is now dominated by the military and the atomic bomb.

Nearly two-thirds of all the research reported at the meeting of the American Physical Society in Washington is directly financed either by the military or by the Atomic Energy Commission now working on the hydrogen bomb.

It is apparent that the hand that holds the money bags is also calling the tune as to what projects will be studied. Nuclear physics and atom smashing on the experimental level occupy 42% of all the current research reported—and in this line the military and AEC control seven out of eight projects.

The United States has been falling behind in theoretical work since the war, yet the emphasis on theory in this meeting does not promise any improvement. Only nine percent of the papers in the meeting were devoted to pure theory, and the military has supported only one-third of this work.

There is good reason to believe that the U. S. may still be importing theoretical work from abroad, since one of the most provocative new ideas of the year—for "non-local fields"—has come from the Japanese Nobel prize winner Dr. Kideki Yukawa, who came to the Institute for Advanced Study and is now at Columbia University.

The lack of emphasis on theory, and the desperate need for good new ideas about

mesons and other elementary particles is holding up the advance of understanding. The evidence given by the supported work seems to show that quick "brain-picking" results rather than long-range effort is the order of the day. Perhaps this is because there is less danger of dangerous thoughts if the physicists are kept busy with billion-dollar bomb projects instead of spending their time on the basic theory which requires the worker to sit and think and to ask all sorts of questions about how ideas fit together.

General physics, which before the war bulked the largest, had only about one-half of the papers given at the meeting, and 53% of this work was supported by the military or AEC. Further analysis shows that a surprising fraction of this work is oriented in some fashion towards war and destruction.

Research physics in this country is big business. The total of approximately 280 research reports given by as many groups of researchers at this meeting must represent an expenditure of at least half a million dollars in funds and time. There are five such meetings each year.

Since most of the research reported was from school projects, it must be concluded that privately supported or endowed science in the universities is rapidly disappearing. Disappearing with it also seems to be the freedom to investigate nature as it is—not as it can be used to destroy mankind.

Science News Letter, May 13, 1950

PSYCHOLOGY

Personality Factors Test

► **MAJOR** differences in temperament can be pinned down to seven factors. And if a psychologist gives you 20 questions, he can tell whether you have one of these factors, impulsiveness, for example.

The seven measurable factors of temperament, and the 20 questions for each, were reported to the National Academy of Sciences in Washington by Dr. L. L. Thurstone, University of Chicago psychology professor, of intelligence test fame.

Besides impulsiveness the other factors in temperament are: pressure for activity, masculinity, dominance, emotional stability, sociability, and reflectiveness.

The person with pressure for activity factor is always "on the go." He or she walks fast, talks fast and drives fast.

Persons high in the masculinity factor like athletics, like to be out of doors, and like to work with tools.

Persons scoring high on the impulsiveness factor are of a happy-go-lucky, care-free, dare-devil disposition. They act on the spur of the moment, make decisions quickly and like competition.

Those who just plug along steadily rank low on the impulsiveness factor.

High scores on the dominance factor go to persons who think of themselves as social leaders, capable of taking responsibility and initiative. They enjoy promoting a new project, like to preside at meetings and like to persuade others.

Persons with emotional stability have even dispositions and are characteristically cheerful.

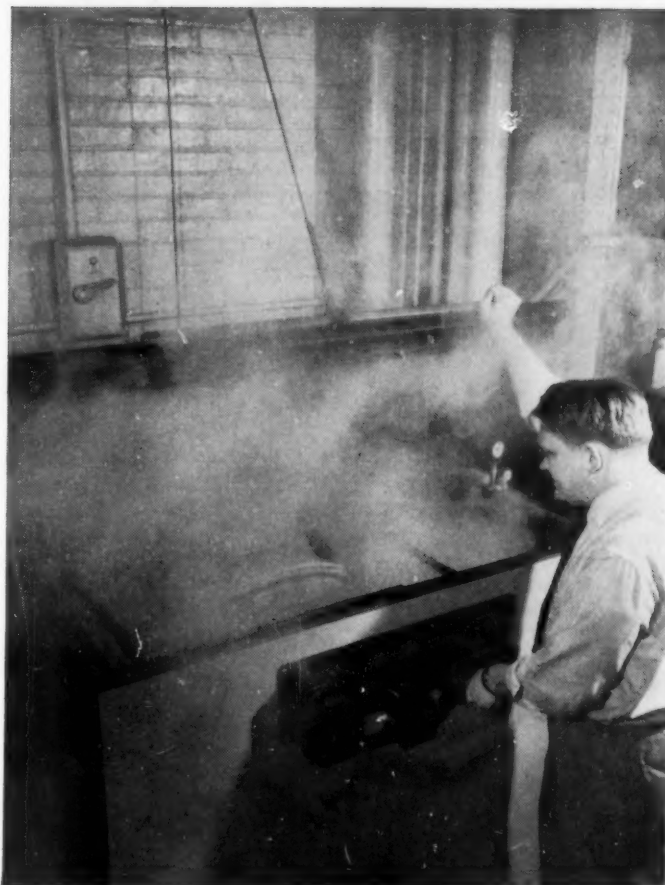
"They can relax in a noisy room and they remain calm in a crisis," Prof. Thurstone says. "They claim they can study with a radio on."

Persons rating high in sociability are the kind strangers like to tell their troubles to. And they usually are tolerant of a great variety of foods.

People with high reflectiveness factor are usually quiet, like to work alone, enjoy work that requires accuracy and detail, often take on more than they can finish and would rather plan a job than finish it.

Science News Letter, May 13, 1950

Who in the world
wants a
smog box?



Only an engineer would think of a practical use for this gadget. Faced with the problem of what will happen to street lighting units where smog shrouds a city, this "box" becomes a vital piece of testing equipment. For, with it, the effects of 20 years of corrosion exposure can be determined in 1,000 hours.

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Chameleon

► ONCE upon a time, so the story goes, there was a luckless chameleon. One day, with characteristic misfortune, it crawled onto a Scotch plaid tartan. In its frantic efforts to blend into this multicolored background, the poor creature died.

Now this is the kind of fable that men of science scoff at, but laymen, having no means of disproof, remember, half skeptical but not completely unconvinced. One scientist, who was enough of a layman at heart to appreciate the fascination of the chameleon tale, decided to do something constructive. He prepared a box littered with patches of different-colored paper, and watched what happened when a chameleon was placed on it.

The colors he chose were green, gray, brown, and black, which are woodland if not Highland colors. When he placed an American chameleon into the box, the little animal curiously explored its new home, but just went on being a dusty brown, the color usually assumed during the bright daylight hours. As a demonstration of the chameleon's alleged eagerness to take on the colors of its surroundings—to the death if necessary—the experiment was a bust.

This and other experiments show that the stimulus to change color does not come from the coloration of the background. The factors which seem to do the trick are light, temperature, and emotion. In the sun the

darker colors emerge, and in the shade the lighter. If a chameleon is placed so that one end is in sun and the other in shadow, the creature will look like a pair of two-toned sport shoes. Dr. Raymond Ditmars has reported a case of a chameleon that was basking in the sun underneath a coarse wire grating. When it moved, against the dark brown body the design of the grating could be seen, marked in pale yellow.

The emotional element is seen to operate when two American chameleon males, properly habited in daylight brown, suddenly encounter each other. They take on an ash-gray color, and the elastic throat pouch puffs out, suddenly appearing a brilliant vermilion. After a brief but furious scuffle you can tell victor from vanquished by the color scheme. The loser, frequently minus a tail which in time will grow back, is now a dull yellow, while the winner is a bright green. These fighting colors soon subside into dull brown once more.

Strictly speaking the name chameleon belongs to a family of African lizards, some species of which are found in Madagascar, Arabia, India, and along the Mediterranean shore from Spain to Asia Minor. However, many lizards have this faculty of rapid color change.

The American "chameleon" is also a lizard but of a different family from the true chameleons. It is found in Florida and other southern states, and in Cuba. It is more agile and less sluggish than its European cousin, but both are highly accomplished at flicking out their long sticky tongues to snag flies and other insects. Their marksmanship is terrific. The flies don't have a chance.

Science News Letter, May 13, 1950

PHARMACY

Pain-Killing Drugs Tested Under New Research Fund

► WITH the aim of predicting the chance of addiction from the newer pain-relieving drugs, Dr. M. H. Seevers of University of Michigan Medical School will be experimenting shortly with monkeys under a grant from the National Research Council's Committee on drug addiction and narcotics.



These brand new, 4 prism, individual focusing binoculars are being offered at this sensationally low price only because of a slight imperfection on outer finish. Lenses and mechanism in perfect condition. Lightweight and easy to carry. Ideal for outdoorsmen, sports fans, etc.

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With similar aid, Dr. Henry K. Beecher of the Harvard Medical School will study the methods of evaluating these drugs on actual patients.

A new research fund has been set up by cooperation from Endo Products, Inc.; Hoffman-LaRoche, Inc.; Lederle Laboratories, Inc.; Eli Lilly & Co.; Mallinckrodt Chemical Works; Merck & Co., Inc.; New York Quinine & Chemical Works, Inc.; Parke, Davis & Co.; The Upjohn Co.; and Winthrop-Stearns, Inc.

Science News Letter, May 13, 1950

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Books of the Week

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BLINDNESS: Modern Approaches to the Unseen Environment—Paul A. Zahl, Ed.—*Princeton University Press*, 576 p., illus., \$7.50. A compilation of the latest techniques in working with the blind.

BOTANY: An Introduction to Plant Science—Wilfred W. Robbins and T. Elliot Weier—*Wiley*, 480 p., illus., \$5.00. An introductory college text.

COUNSELING THE HANDICAPPED IN THE REHABILITATION PROCESS—Kenneth W. Hamilton—*Ronald*, 296 p., illus., \$3.50. A guide book for counselors of the handicapped.

EARLY MAN IN THE NEW WORLD—Kenneth Macgowan—*Macmillan*, 260 p., illus., \$5.00. An anthropological study of man in the Western Hemisphere.

THE ECOLOGY AND DISTRIBUTION OF HEPATICAE IN CENTRAL AND WESTERN NEW YORK—R. M. Schuster—*University of Notre Dame Press*, 201 p., \$2.50. A handbook of the Hepaticae reprinted in book form from the *American Midland Naturalist*, Nov. 1949.

EVERGREEN ORCHARDS—William Henry Chandler—*Lea & Febiger*, 452 p., illus., \$6.00. A textbook dealing with the structure and physiology of evergreen species, most of which are grown for their fruit as food for people.

FISHERY STATISTICS OF THE UNITED STATES 1946—A. W. Anderson and E. A. Power—*Gov't Printing Office*, U. S. Dept. of Interior Statistical Digest 19, 265 p., illus., paper, \$1.00.

GENERAL REPORT, Rep. No. I: Chemical Industries Committee—International Labor Office, 176 p., illus., paper, \$1.25. A report on the recent developments in the Chemical Industries. Presented at the Second Session, Chemical Industries Committee, Geneva, Switzerland, April 1950.

GEOPHYSICS, Vol. 45, No. 4A: Quarterly of the Colorado School of Mines—Colorado School of Mines, 103 p., illus., paper, \$1.00. Papers delivered at the Conference on Geophysics, Sept. 30-Oct. 1, 1949, as a part of the program for the observance of the Seventy-fifth Anniversary of the Colorado School of Mines.

HARVEY CUSHING: Surgeon, Author, Artist—Elizabeth H. Thomson—*Schuman*, 347 p., illus., \$4.00. The personal and professional life of this great surgeon.

HISTORY OF PHYSICS—Max von Laue—*Academic Press*, 150 p., \$2.30. Material is included through 1940. Translated from the German by Ralph Oesper.

JAN INGENHOUZ PLANT PHYSIOLOGIST WITH A HISTORY OF THE DISCOVERY OF PHOTOSYNTHESIS—Howard S. Reed—*Chronica Botanica*, approx. 105 p., illus., paper, \$3.00.

MOSQUITOS OF THE GENUS TRIPTEROIDES IN THE SOLOMON ISLANDS—John N. Belkin—*Smithsonian*, approx. 73 p., illus., paper, free upon request to publisher, Washington 25, D. C. A monograph reporting the author's taxonomic and ecological findings.

THE NATURE OF REALITY: A Philosophy of Modern Physics—Henry Margenau—*McGraw-Hill*, 479 p., illus., \$6.50. A discussion of the philosophical implications of the developments of modern science.

THE ORGANIZATION OF WORKING HOURS IN THE CHEMICAL INDUSTRIES, Rep. No. III: Chemical Industries Committee—International Labor Office, 73 p., paper, 50 cents. A report presented at the Chemical Industries Committee meeting, Geneva, Switzerland, April, 1950.

PEST CONTROL MATERIALS 1950—D. E. H. Frear and M. T. Hilborn—*Pennsylvania Agricultural Exp. Station, Maine Agricultural Exp. Station and Northeast Agricultural Exp. Station*, rev. ed., 148 p., paper, free upon request to publisher, Pennsylvania Agricultural Exp. Station, The Pennsylvania State College, State College, Pa. A list of approximately 4000 fungicides, herbicides, insecticides and rodenticides and their trade names.

THE PLACE OF STATISTICAL METHODS IN BIOLOGICAL AND CHEMICAL EXPERIMENTATION—Edwin J. DeBeer and others—*New York Academy of Sciences*, 155 p., illus., paper, \$2.25. A monograph showing the place and value of statistics in research.

PLANE TRIGONOMETRY—John J. Corliss and Winifred V. Berglund—*Houghton*, 388 p., illus., \$3.00. An introductory text.

RECORD OF THE FIRST SESSION: Chemical Industries Committee—International Labor Office, 223 p., illus., paper, \$1.25. The proceedings of the first session of the Chemical Industries Committee held in Paris, April 7-16, 1948.

Science News Letter, May 13, 1950

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☼ **SUN GLASSES**, adjustable to meet all varying light conditions, have two polarizing lenses in each cell. The front lens is in a fixed position but the rear lens can be turned through a 90-degree arc. This permits finger-tip adjustment to allow only the desired degree of light to reach the eye.

Science News Letter, May 13, 1950

☼ **TINY TRANSFORMER**, for use in hearing aids, miniature equipment used on airplanes and other low-level electrical applications, weighs about one-fourth of an ounce and is said to be the smallest in the world. Dependability is provided through the use of a molded nylon bobbin and non-hygroscopic insulation.

Science News Letter, May 13, 1950

☼ **THROW-AWAY RAZOR**, recently patented, is basically a small hollow cylinder of a cheap plastic with a cutting blade molded in its rounded surface. A projection along the same surface in front of the blade makes the end-view of the device look like a comma. The cylinder itself is the handle.

Science News Letter, May 13, 1950

☼ **PLASTIC BOOMERANG**, shown in the picture, has leading edges beveled to work like the ailerons of an airplane. When



hurled, it flies out nearly horizontally, then veers to the left, and returns to the vicinity of the thrower, making a spiral landing.

Science News Letter, May 13, 1950

☼ **ATTRACTIVE BACK YARD** rubbish burner is a sheetmetal box-like affair with a pyramidal hinged top, the whole resembling somewhat the old square parlor stove.

Vents at the bottom and top provide air admission and smoke emission, and a removable wire basket for a grate makes debris disposal easy.

Science News Letter, May 13, 1950

☼ **DIESEL ELECTRIC GENERATORS**, on a common steel base, are designed for continuous service applications ranging from farms to factories. The engine is directly connected to a single bearing generator. Ordinary units are 60-cycle, with 40 to 250 kilowatt ratings.

Science News Letter, May 13, 1950

☼ **WHEEL CARD FILE**, for telephone use, is mounted directly over the rear of the ordinary telephone desk set above a base into which the telephone is placed. The loose leaf cards are in a handy position, and the file and telephone together require no more desk space than the phone alone.

Science News Letter, May 13, 1950

☼ **FIRE HOSE**, 12% lighter and 50% stronger than present types, owes its lighter weight and greater strength to a new, chemically-produced fiber which is used in the filler cords in the jacket. The new hose is more flexible, easier to handle, and takes less space when coiled than standard constructions.

Science News Letter, May 13, 1950

Do You Know?

Coal-eating does not help pigs in spite of a popular belief.

Human hearts and brains are now being mapped by radar.

Italy is the principal tobacco-producing country of Western Europe.

A water spray containing small amounts of maleic hydrazide in its diethanolamine salt delays the blossoming of strawberry and raspberry plants about 10 days.

An anesthetic used by dentists for the past 25 years is now found to be the best "truth serum" ever discovered; it is somnoform, and is particularly helpful in cases of amnesia.

Piezoelectric effect is the ability of certain crystals, such as quartz, to develop electric charges on their surfaces when mechanically pressured, and to convert electric charges applied to them into mechanical action.

Ascorbic acid, also known as vitamin C, gives promise as a chemical for the treatment of certain types of insanity.

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